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Better Web Control®

U-Series

Under Pillow Block Load Cells

IP67

Montalvo U-Series Under Pillow Block Load Cells

Montalvo's U-Series are used in conjunction with pillow block mounted bearings and a shaft to create a durable and precise tension roll that's easy to install. With an IP67 rating the U-Series offers an extreme level of protection and performance for applications in wet, dusty, chemical, corrosive or other harsh environments.

Features

- Industry leading 1550X Sensitivity
- Enhanced reliability simplifies tension control protection and repeatability
- Full Semiconductor Wheatstone Bridge (when used in pairs)
- Built-in overload stops
- Chemical and corrosion resistant
- High overload protection protects workers, equipment and product
- Drilled and tapped to customer bearing specifications

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U-Series

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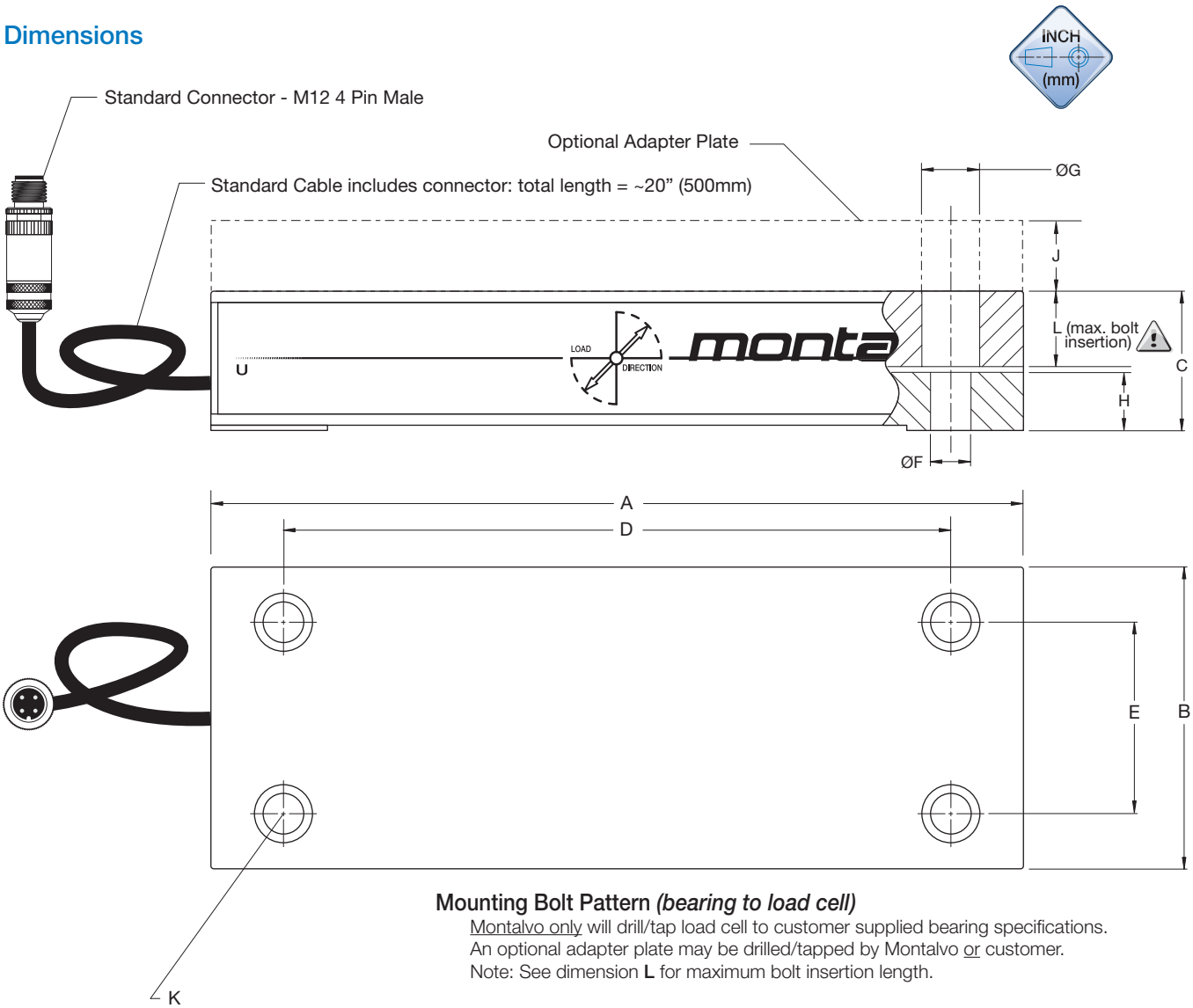
Dimensions



Mounting Bolt Pattern ***(bearing to load cell)***

Montalvo only will drill/tap load cell to customer supplied bearing specifications.
An optional adapter plate may be drilled/tapped by Montalvo or customer.
Note: See dimension **L** for maximum bolt insertion length.

Mounting Bolt Hole ***(load cell to machine frame)***

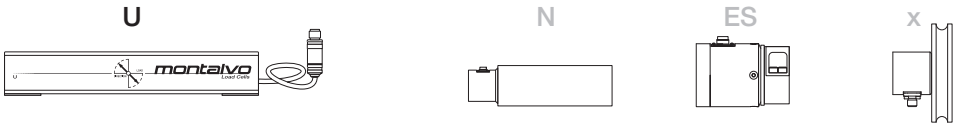
Bolts to be customer supplied.
SHCS - Typ.

Size	A	B	C	D	E	ØF	ØG	H	J	K	L
U25	5.28 (134)	1.74 (44)	1.10 (28)	4.65 (118)	1.10 (28)	0.27 (7)	0.47 (12)	0.44 (11)	0.50 (12)	1/4" (M6)	0.63 (16)
U50	8.27 (210)	2.68 (68)	1.42 (36)	7.09 (180)	1.73 (44)	0.35 (9)	0.59 (15)	0.55 (14)	0.70 (19)	5/16" (M8)	0.78 (20)
U75	11.02 (280)	4.09 (104)	1.89 (48)	9.06 (230)	2.60 (66)	0.55 (14)	0.79 (20)	0.83 (21)	1.00 (25)	1/2" (M12)	1.02 (26)
U120	16.54 (420)	5.91 (150)	2.60 (66)	12.60 (320)	3.54 (90)	0.87 (22)	1.34 (34)	1.18 (30)	1.00 (25)	3/4" (M20)	1.34 (34)

How To Specify

Series

U, N, ES or X

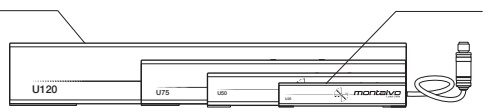


Size

25, 50, 75 or 120

Consider the following:
Load rating & size of pillow block bearing to be installed

Higher Loads
Larger Shafts
Larger Dimensions



Lower Loads
Smaller Rollers
Smaller Dimensions

Load Rating

Step 1 Determine Weight of Roll, F_g (fig. 1) :
F_g = weight of roll (lb)

Step 2 Determine Resulting Force, F_{res} (fig. 2) :
$F_{res} = 2 \cdot F_{web} \cdot \sin X/2$
F_{web} maximum web tension (lb)
X wrap angle of web (°)
lb represents pounds force (TOTAL tension)

fig. 1

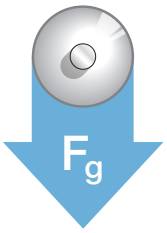


fig. 2

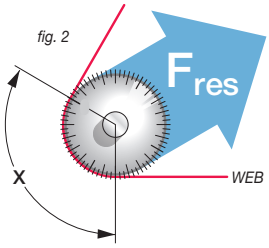
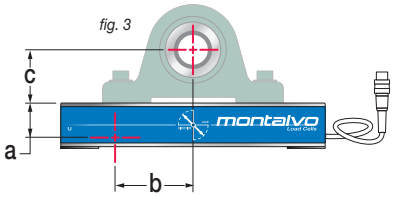


table 1 in (mm)

Size	a	b
U25	0.97 (24.6)	1.5 (38)
U50	1.18 (30)	2.99 (76)
U75	1.61 (41)	3.74 (95)
U120	2.17 (55)	5.24 (133)

fig. 3

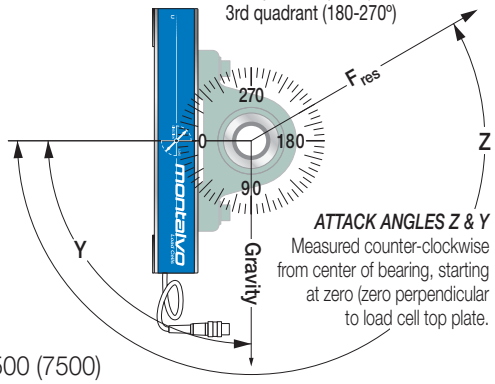


Step 3 Determine Height Factor, d (fig. 3) :
d = (a + c) / b
a* perpendicular distance from hinge to mounting surface (in) (see table 1)
b parallel distance from hinge to center of load cell (in) (see table 1)
c center height of selected bearing housing
* add thickness of adapter plate if used (dimension J)

Step 4 Determine Load Value, F_{dim} (fig. 4) :
$F_{dim} = ½ \cdot F_{res} \cdot (\cos Z + d \cdot \sin Z) \cdot k_{dim} + ½ \cdot Fg \cdot (\cos Y + d \cdot \sin Y)$
Z attacking angle of resulting force (°)
Y attacking angle of F_g
k_{dim} dimensional factor = 1.6

fig. 4

Hinge End of load cell must mount so that Resulting Force Fres attacks in:
1st quadrant (0-90°) or
3rd quadrant (180-270°)



ATTACK ANGLES Z & Y
Measured counter-clockwise from center of bearing, starting at zero (zero perpendicular to load cell top plate.

Step 5 Determine Load Rating - lb (N) :
Select nearest rating equal to or greater than larger value F_g or F_{dim}
F_g answer to Step 1
F_{dim} answer to Step 4

Rating - Size 25	100 (500) /225 (1000) / 450 (2000)
Rating - Size 50	100 (500) / 250 (1250) / 500 (2500) / 1000 (5000) / 1500 (7500)
Rating - Size 75	1000 (5000) / 1500 / (7500) / 2500 (12500) / 5000 (25000)
Rating - Size 120	5000 (25000) / 10000 (50000) / 20000 (100000)

Example

U - 75 - 2500LB

Series - U
Size - 75
Load Rating - 2500LB (12500N)

Include bearing bolt info and cable length option.

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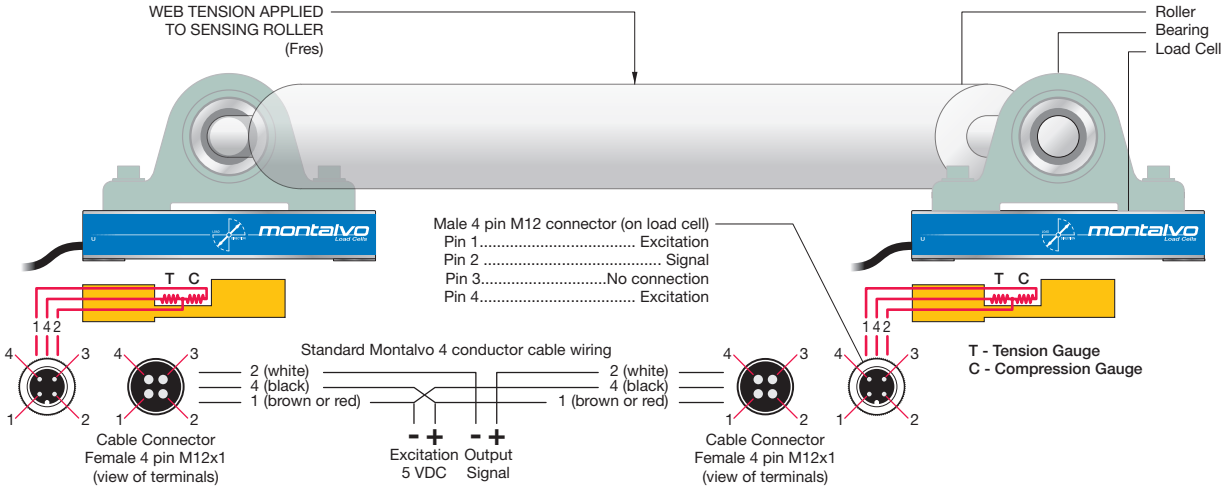
How They Work



Specifications

Electrical

Supply voltage.....5 VDC
Output..... 250 mV, nominal @ full load
Gauge: Resistance .....80 - 130 Ω
Type .....half bridge semi-conductor strain
Non-Repeatability .....±0.2% full span
Non-Linearity & hysteresis (combined) .....±0.5% full span

Connector (standard)

Type .....Male 4 pin M12
Pin 1.....Excitation
Pin 2..... Signal
Pin 3..... No connection
Pin 4.....Excitation
Cable length (including connector)..... 20 in. (500mm)
Non-standard cable (optional)..... By request
No connector (optional) ..... By request

Load Rating* - lb (N)

25 ..... 100 (500) / 225 (1000) / 450 (2000)
50 .... 100 (500) / 250 (1250) / 500 (2500) / 1000 (5000) / 1500 (7500)
75 ..... 1000 (5000) / 1500 (7500) / 2500 (12500) / 5000 (25000)
120 ..... 5000 (25000) / 10000 (50000) / 20000 (100000)
Overload Rating.....300% of Load Rating
Overload stops .....Factory set @ 110% Load Rating
* Recommended that Montalvo be contacted to ensure proper sizing.

Environmental

Enclosure protection class.....IP 67
Operating temp. °F (°C) .....-4 to +176 (-20 to +80)

Mechanical - in (mm)

Deflection (at nominal force) ..... 0.005 to 0.010 (0.3 to 0.25) typ.
Material ..... stainless steel

Dimensions in (mm)

25 ..... 5.28 x 1.73 x 1.10 (134 x 44 x 28)
50 ..... 8.27 x 2.68 x 1.42 (210 x 68 x 36)
75 .....11.02 x 4.09 x 1.89 (280 x 104 x 48)
120 ..... 16.54 x 5.91 x 2.60 (420 x 150 x 66)

Weight - lb (kg) approximate (does not include bearing)

25 .....2.5 (1.1)
50 .....6 (2.5)
75 .....18 (8)
120 .....60 (26)

Bearings

Self-aligning.....Recommended

Related Montalvo Products

The Z4 Hybrid Digital Tension Controller
The S4 Digital Tension Controller
The A4 Digital Load Cell Amplifier
Montalvo Tension Indicators
and... Cables

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